

REMARKS/ARGUMENTS

In the Office Action, the Examiner has rejected independent claims 6, 14, and 17 based on Caruso in view of El-Aini. As will be further discussed below, Applicants respectfully traverse the Examiner's rejections even if the references can be properly combined. Applicants respectfully submit that neither of the references, either alone or in combination, disclose the features of Applicants' invention, as claimed, of a rotor that has several blade rings arranged axially one behind the other, where each of the blade rings of the rotor have blades that are arranged at a different distance from one another. Thus, in Applicants' invention, the rotor has several rotatable blade rings and each of the several blade rings of that same rotor has differently spaced blades.

Applicants respectfully submit that Caruso does not disclose a rotor where that same rotor has multiple rotatable blade rings. Thus, Caruso cannot then further disclose multiple rotatable blade rings on a same rotor with the claimed spacing of the blades. All that Caruso discloses is two cooperating members of a turbo-machine stage where one of the cooperating members is a stationary nozzle ring and the other cooperating member is a rotating bucket wheel. Even if Caruso discloses that either the nozzles of the stationary ring or the buckets of the rotating bucket wheel, or even both the nozzles of the stationary ring and the buckets of the rotating bucket wheel, may include the modulated pitch design, Caruso still does not disclose the features of Applicants' invention where the rotor has several rotatable blade rings and each of the several rotatable blade rings of that same rotor have differently spaced blades. Caruso cannot disclose this because Caruso only discloses a single stationary nozzle ring and a single rotating bucket wheel.

Further, Applicants respectfully submit that El-Aini does not disclose a single rotor that has several rotatable blade rings and each of the several rotatable blade rings of that same rotor have differently spaced blades. El-Aini discloses a gas turbine engine 10 that includes a fan 12, a low pressure compressor 14, a high pressure compressor 16, a combustor 18, a low pressure

turbine 20, a high pressure turbine 22, an augmentor 24, and a nozzle 26 symmetrically disposed relative to an axis of rotation 28. Therefore, even if the Examiner is arguing that El-Aini discloses multiple rotors, i.e., “multiple fan rotors 12, 14 and compressor rotors 16”, axially arranged in series, Applicants respectfully submit that this still does not disclose Applicants’ claimed invention where the same rotor has several rotatable blade rings and each of the several rotatable blade rings of that same rotor have differently spaced blades. As can be seen in Figures 2-4 of El-Aini, El-Aini discloses a rotor stage that includes a disk 34 and blades 36, and as disclosed at col. 5, lines 39-41, “the present invention provides a rotor stage for a gas turbine engine that includes apparatus for damping vibrations.” (emphasis added). Therefore, Applicants respectfully submit that even if El-Aini discloses multiple rotors, El-Aini does not disclose a same rotor that has multiple rotor stages as claimed by Applicants. Thus, even if El-Aini discloses multiple rotors, each multiple rotor only has a rotor stage, and modifying the single rotor teaching of Caruso to include the multiple rotors of El-Aini still does not disclose or suggest Applicants’ claimed invention where the same rotor has several rotatable blade rings and each of the several rotatable blade rings of that same rotor have differently spaced blades. All that would result if Caruso was modified by El-Aini would be multiple rotors that each only had a single rotor stage. Applicants claim a single rotor that has multiple rotor stages with the claimed blade spacing.

Further, Applicants respectfully submit that one skilled in the art would not attempt to modify Caruso to include multiple rotatable blade rings in a same rotor based on the teachings in Caruso. Caruso acknowledges that it is even “not quite so obvious why the modulated spacing of the buckets [of the rotating bucket wheel] in FIG. 2a has a beneficial effect on the vibration characteristics of the structures.” Col. 8, lines 54-56. (emphasis added). Caruso further explains that modulating the pitch of the moving buckets 9 has “a beneficial effect in reducing the vibration forces applied to the radially extending nozzle partitions or blades of the stationary nozzle ring member 7.” Col. 8, lines 70-73. (emphasis

added). Thus, since it is not even obvious why modulating the spacing of the rotating buckets has a beneficial effect, and since the beneficial effect is taught as reducing vibration forces on the stationary nozzle ring member, Applicants respectfully submit that there could be no motivation to modify Caruso to include multiple rotating bucket wheels based on the teachings of Caruso since the desired effect is achieved by the relationship between a rotating bucket wheel and an associated stationary nozzle ring.

Applicants also respectfully submit that claims of the scope of the independent claims in the present application were found allowable by the Examiner in the International Preliminary Report on Patentability, particularly over these same two references cited by the Examiner in the present application, and as cited by Applicants in this application. In the PCT Report, the Examiner stated that the subject matter involves an inventive step for the reason that “a rotor that comprises a plurality of blade rings which are arranged axially one behind the other, the blades being disposed inside each blade ring at varying distances from one another, is optimized with regard to the vibration mechanics, resonance vibrations thereby being avoided to a greater extent.” The Examiner noted that the subject matter of the claims differs from the known rotor of El-Aini because “the rotor comprises a plurality of blade rings which are arranged axially one behind the other and the blades are disposed inside each blade ring at varying distances from one another.” (emphasis added).

Therefore, for at least the above reasons, Applicants respectfully submit that independent claims 6, 14, and 17, and the claims that depend therefrom, are allowable over the cited references. Applicants have amended these independent claims to more particularly claim Applicants’ invention.

Applicants also respectfully traverse the Examiner’s drawing objections. In the Office Action, the Examiner is requiring the drawings to meet the requirements of 37 CFR 1.83(a) and 37 CFR 1.84(u)(2). Applicants respectfully submit that this application is the National Stage application of an International PCT application. Applicants also respectfully submit that in accordance with

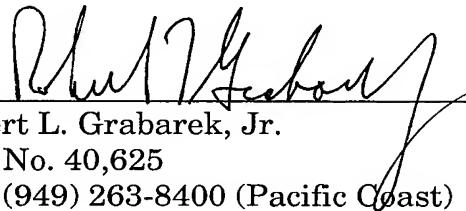
M.P.E.P. § 1893.03(f), the “drawings for the national stage application must comply with PCT Rule 11.” Further, “[t]he USPTO may not impose requirements beyond those imposed by the Patent Cooperation Treaty (e.g., PCT Rule 11).” Further yet, in accordance with PCT Rule 11 (See M.P.E.P. § 1825), drawings are only required “when they are necessary for the understanding of the invention.” Applicants respectfully submit that the PCT examining authority has found that the drawings filed with the PCT application are sufficient for an understanding of the invention and that they meet the requirements of the PCT. Therefore, Applicants respectfully submit that the drawings are not objectionable for this National Stage application. Applicants respectfully submit that the drawings are not required to meet the requirements of 37 CFR 1.83(a) and 37 CFR 1.84(u)(2) and respectfully request the Examiner to withdraw his drawing objections.

Applicants respectfully submit that the application is now in condition for allowance. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response. Please charge any such fee or any deficiency in fees, or credit any overpayment of fees, to Deposit Account No. 05-1323 (Docket No. 011235.57084US).

Respectfully submitted,

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